

# STRUCTURING AND ENGAGING



**The roles of design fiction  
in a co-design workshop**

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in a co-design workshop

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Master's thesis

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## Abstract

Design fictions present speculative scenarios and provocative stories to create space for discussion and reflection. Through building a story world, the design fictions provide a space for prototyping and presenting new ideas and perspectives.

This thesis analyses design fictions as a workshop method, using a co-design workshop, 2030 – An Ecosystem Odyssey, as a case study. The research question is exploring what kind of roles design fictions serve in a workshop, in the tasks and in the participant discussion. The topic is approached from two perspectives, from the organiser point of view focusing on the process of planning and running the workshop and from the participant point of view on the tasks and discussions in the workshop.

Through the analysis of the case study, ten roles of design fictions were recognised. For the organisers, the design fictions are a way to present perspectives and topics that they see relevant in the workshop. The design fictions are also a way to promote the workshop. In the tasks the design fictions can set the participant roles, structure and facilitate the tasks and be a part of the whole workshop storyline. For the participants, the design fictions are a starting point into the task and a platform presenting embedded values and ideas. The design fictions introduce different perspectives and can help to imagine the future in somewhat concrete terms. They also play a role in creating connections between the tasks and the workshop goals. The roles can be divided into three bigger groups that summarise the roles that design fictions can serve: setting the scene, structuring the tasks and embedding values. With those groups of roles, the design fictions contribute in building the workshop.

The workshop is part of DIMECC Design for Value program involving companies from maritime and manufacturing industries and research partners. The project brings the workshop and the use of design fictions as a method to business-to-business context.

### **Keywords:**

Design fiction, co-design workshop, workshop facilitation method



# Tiivistelmä

Design-fiktiot eli fiktiiviset, tulevaisuuteen sijoittuvat skenaariot esittävät spekulatiivisia tapahtumia ja provokatiivisia tarinoita herättääkseen keskustelua ja pohdintaa yleisössään. Kuvitteellisen maailman kokoamisen kautta design-fiktiot luovat tilan, jossa kehittää ja kokeilla prototyyppejä uusista ideoista tai kuvailla erilaisia tulevaisuuden näkymiä.

Opinnäyte analysoi design-fiktioita työpajamenetelmänä 2030 – An Ecosystem Odyssey -työpajan kautta. Tutkimuskysymys tarkastelee rooleja, joissa design-fiktiot toimivat työpajassa, sen tehtävissä ja osallistujien keskusteluissa. Rooleja analysoidaan kahdesta eri näkökulmasta, järjestäjien näkökulmasta keskittyen työpajan suunnittelu- ja järjestämisprosessiin ja osallistujien näkökulmasta, kiinnittäen huomiota tehtäviin ja tehtävien aikana tapahtuviin keskusteluihin.

Työpajan, sen suunnitteluprosessin ja palautehaastattelujen kautta kerätyistä materiaaleista löytyi analyysissä kymmenen roolia. Työpajan järjestäjille design-fiktiot ovat keino esittää tärkeiksi koettuja näkökulmia ja aiheita sekä tapa markkinoida työpajaa. Tehtäviä luodessa design-fiktiot auttavat sijoittamaan osallistujat tiettyyn rooliin tehtävässä ja tuomaan rakennetta tehtäviin. Design-fiktiot ovat myös osa koko työpajan juonta. Osallistujille design-fiktiot tarjoavat aloituspisteen tehtäviin. Ne esittävät eri näkökulmia ja ideoita, mutta tarjoavat rivien välissä myös oletuksia arvoista ja ideologioista. Design-fiktiot auttavat kuvittelemaan tulevaisuutta esittämällä siitä konkreettisia esimerkkejä sekä luovat yhteyksiä tehtävien ja työpajan tavoitteiden välille. Löydetyt design-fiktioiden roolit voi jakaa kolmeen ryhmään: tapahtumapaikan valmisteleminen, tehtävien rakentaminen sekä arvojen ja ideoiden esittäminen.

Työpaja on osa DIMECC Design for Value -hanketta, johon osallistuu yrityksiä merenkulun ja teollisuuden aloilta sekä tutkimusyhteistyökumppaneita. Projekti tuo työpajan ja design-fiktiot työpajamenetelmänä yritysmaailman ja yhteissuunnittelun kontekstiin.

## Avainsanat:

Design-fiktio, yhteissuunnittelun työpaja, työpajamenetelmä

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# 1. Introduction

Design fictions build worlds where everything is possible, stories of imagined futures and new technologies changing how the everyday life is run. They can present something speculative and provocative to start discussions and reflections on how things are done today, how they could be done in the future and what are the consequences of each. To Hanna et al. (2016) design fictions are a tool to recognise desirable futures: *“Telling stories about possible futures helps us to realise our agency in achieving what is preferable, rather than passively accepting the “flat-pack futures” sold to us by corporations”* (p.6). Design fictions can give voice to groups of people and perspectives that are often forgotten and help in creating a shared vision amongst various stakeholders.

This thesis explores design fictions, fictional future scenarios that open and create discussion, as a workshop method. Bringing design fictions into the workshop context creates certain needs for the method but at the same time design fictions can participate in building the workshop. The focus of the thesis is to explore the roles that design fictions serve in a workshop, which are researched through analysing a case study of a co-design workshop. The analysis is done from two perspectives, the organiser’s and participants’, in orders to look at the roles of design fictions throughout the process of planning, running and participating in a co-design workshop.

Even though design fictions are fictional, the method is used and explored in a real project context. The case workshop is part of a research program DIMECC Design for Value that focuses on developing new models business-to-business collaboration while catering the new needs brought on by digital disruption and new autonomous systems.

## 1.1 Research objectives

The objectives of the thesis are to explore and develop the understanding and applications of design fiction as a method in co-design workshop. To the field of design research the thesis aims to generate new knowledge on design fictions and how they can be applied to co-design, especially in the context of a workshop. Understanding better the aims and possibilities of design fiction helps in developing meaningful tools and methods that can provide the participants with new perspectives and support in unlocking creativity. Design fiction offers an engaging

method to discuss and consider issues of today through alternative scenarios of the future. One objective is also to apply the method in business context and connecting the use of fictional scenarios to real project development work.

My personal objective is to test my abilities to do design research, to analyse the outcomes of a workshop and connect my insights to the existing theories in the field. At the same time, I'm interested in exploring design fictions and different approaches with them to get a better understanding of that field of research and how design fictions could be used more in the design process. The chance to joining the Design for Value research project was an interesting opportunity for me to explore the topic and learn about design research in a real project context.

The research question is:

**What kind of roles design fictions serve in a workshop, its tasks and participant discussions?**

The question is looked at from two different perspectives: from the perspectives of the organisers planning and conducting the workshop and from the perspective of the participants that engage in with design fictions in the workshop tasks.

## **1.2 Approach and data**

The research approach is practise-based and builds on the methodology of constructive design research, an approach "in which construction - be it product, system, space or media - takes center place and becomes the key means in constructing knowledge" (Koskinen et al. 2011, p.5). In this thesis the construction is a co-design workshop utilising design fiction as a method. Empirical material is collected from the workshop and its planning phase. The material is supported with interviews with five workshop participants and two team member colleagues that participated in organising the workshop. The shared planning files of the workshop team, personal notes from the process and all the workshop task materials are also part of the data. On top of that, being part of the research and reflecting my experience as an organiser provides perspectives into the discussion. From the analysis of the material, emerging themes are recognised and brought together. In the end the empirical data and findings from the overall workshop experience are connected to the existing literature.

The materials for the analysis were collected throughout the workshop planning and conducting process. As a team of three, Yiyi Wu, Mariia Niskavaara and I, we developed the workshop tasks, the overall storyline and practicalities of the workshop and created the materials for the pilot and final workshop. The process was documented into shared planning files and by notes from discussions. Besides participating in the planning of the overall storyline of the workshop, my responsibilities included the look of and finalising the printed materi-

als for the workshop, developing first task 3 for the pilot workshop and then Episode 2 in the final workshop with Mariia, the feedback form and recordings in the workshop. The workshop was recorded by two video cameras and each team table had an audio recorder. The audio recordings were transcribed by Yiyi Wu and I. The participants were asked to complete a feedback form in the workshop and afterwards I conducted five feedback interviews with participants about the workshop and design fictions. The interviews provided a glimpse into the participant experience of the workshop. I also interviewed Mariia Niskavaara and Yiyi Wu about the process of planning and running the workshop with design fictions. All of the interviews were transcribed for the analysis as well. On top of the materials from the workshop, interviews and transcripts, I have my personal notes and photographs from the planning sessions that reflect the experience of organising the workshop.

The analysis on the data started out by reading through the materials, then coding insights (for example when and how the participants mention the design fictions), noticing emerging themes and grouping them into first insight groups and regrouping them various times into the final roles of the design fictions. The materials and analysis is approached in two parts, first looking into the roles the design fictions got from us the organisers in the planning phase and then from the participants in the workshop. The aim is not to compare the two sets of roles or see if the roles set by the organisers are met in the workshop. The goal was to explore the use of design fictions from two perspectives to find out what kind of different roles that design fictions can take in the workshop context, to continue building understanding of design fictions as a method.

## **1.3 Context**

The context of the case workshop is DIMECC Design for Value (D4V) research program which allowed us to explore the use of design fictions in a real life business-to-business context development project (<http://d4value.dimecc.com/about>). The D4V program focuses on creating new business opportunities and models through the changes that the digital disruption and autonomisation of systems will bring.

Our workshop is part of the D4V work package 'Desirable ecosystem' and research theme 'Ecosystem acceptance'. They aim at bringing the societal values and human perspectives to the discussion and development process of the project participants coming from the maritime and manufacturing industries in Finland.

## **1.4 Structure of the thesis**

Chapter 2 introduces the literature study on design fictions, the definition, characteristics and previous approaches taken with them, establishing the context of research on design fictions. Chapter 3 describes

the workshop that will be analysed, 2030- An Ecosystem Odyssey. The chapter describes the context of D4V project, the planning process of the tasks utilising design fictions, the storyline of the workshop and briefly the final tasks as well.

Chapter 4 focuses on the analysis findings that are presented through the different roles of the design fictions that were found through the analysis. Chapter 4.1 describes the findings from the organisers' point of view and 4.2 from workshop participant's point of view. The results are discussed in Chapter 5, connecting them also with literature. Chapter 6 reflects on the whole process of the workshop and on perspectives worth further research.

## 2. Related research

The literature review explores definitions and characteristics of design fictions and how they have been previously used. The chapter also connects and compares design fictions to similar approaches, speculative design and value fiction, that are often used for similar purposes with a different focus. Background study on design fictions helps in understanding one's own insights and reflecting them within the field of design fiction. As co-design plays an important part in the D4V project, bringing together stakeholders from different companies, two industries and the research field, it is included in the literature review as well.

### 2.1 Definitions and characteristics

Over the last (nearly) fifteen years, design fictions have been applied and used in many design projects. The term design fiction was brought up by Bruce Sterling in early 2000s and since then it has been developed and defined again by many practitioners and researchers. In his book *Shaping things* (2005) Sterling compares design fiction to science fiction and concludes on design fiction being more tangible, even though it has less magic around it than science fiction, design fiction can get closer to the *“technosocial conflict through its applications”* (p.30). Design fictions often take a critical, exploratory or provocative perspective to possible changes that are imagined to happen with new technologies and to the consequences that the changes will bring to social aspects of life (Lindley 2015, p.7). Aiming to open new perspectives and encouraging discussions on the future possibilities makes it characteristic for design fictions to not to have a tangible end result (Ibid, p3). Instead, the outcome of design fiction is the results and insights from the discussions and engagement with the design fictions, something that can be utilised later in design or development projects (Lindley & Coulton 2014, p.4).

In Sterling's definition of design fiction, one important aspect is diegetic prototypes: design fiction is *“the deliberate use of diegetic prototypes to suspend disbelief about change”*. It is about creating a world where the new concepts, prototypes of new ideas, are included as existing parts, to be used and evaluated over in a somewhat serious manner. (Sterling 2012) The term diegetic, coming from Greek philosophy and narrative theory, is referring to the *“world of the story”*, stating



that design fictions are prototyping ideas, concepts or technologies in the imagined story worlds which allow countless possibilities (Lindley 2015 p. 5). The creation of diegetic prototypes is not tied to any specific medium, while it is important to consider the audiences and the most effective approaches to communicate the ideas. (Ibid, p.6).

Knutz et al. (2014) state that while the term fiction is often related to something untrue or unreal, the imaginary aspect related to them is important for being able to imagine beyond what exists already today (p.2). The design fictions can be seen as boundary objects that can bring together different groups, like participants from industry and academia, and different perspectives (Brown et al. 2016, p.1). Referring to Star and Griesemer's (1989) definition, Brown et al. (2016) describe boundary objects as something that is applicable to all the involved participants but at the same time something that can hold its own identity as well (p.7). They describe an example project where design fiction was used to imagine future homes in the form of a future IKEA catalog that helped the participants to discuss and speculate about the practices of today and the future without getting stuck in the present challenges and constructs. To Brown et al. design fictions also have the role of critique: they "*can be possible but interesting, unusual but also upsetting*" and bring out concerns and worries towards the current actions as well. (p.1-2) Design fictions often have both utopian and dystopian qualities, as both scenarios can be turned into a critique (on today or future practices) when explored with a critical viewpoint (Knutz et al. 2014, p.3).

James Auger (2013) writes about speculative design, but the idea he presents, a perceptual bridge, is applicable to design fictions as well. He sees the perceptual bridge as one of the vital elements of speculative designs that help to get the participants to engage with the speculation (p.1), since if there is no connection points to the audience, they will not relate to and work with them. The bridge can be found almost anywhere as long as there is something familiar for the audience to recognise in the speculation. (p.2) The connection to the everyday and bringing the speculation to the familiar situations set speculative design apart from science fiction and help the audience to reflect their own feelings and opinions to it (p.10). Speculations need to be provocative to get the audience to engage with them, but at the same time with sensitive topics, too provocative approach can be discouraging, leading to "*revulsion or outright shock*" (p.4).

Besides embedding something everyday-like to speculative design or fictions, Knutz et al. (2016) see that narrative anthropomorphism and pastiche scenarios are two approaches to make fictions seem more familiar and complex. That can be done through presenting non-alive objects and technology with personality or by telling the whole scenarios through a character, setting or style or presenting that is known from some other occasion, like literature or television. (p.3)

These approaches aim to make the characters and scenarios more vivid and relatable and open up new perspectives to the fiction (p.5). When participants are "*engaged in a game of make-believe – – mediated by props*" it creates a great setting and prompts for imagination and the fictional space to become a design space where participants can take part in continuing the fictional truth. Such a space can be utilised to explore the setting and the embedded values of the fiction, reflecting different perspectives of present as well. (p. 3-4)

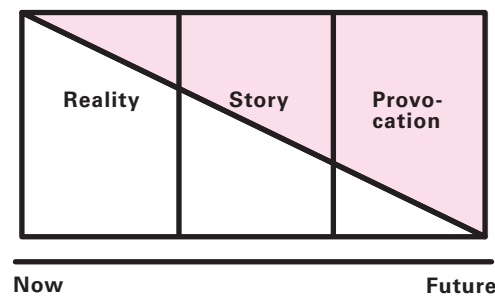
## 2.2 Design fiction as world building

Most of the definitions of design fictions tie in the idea that the design fiction establishes a story world but the role of narrative and stories in the world is debated. Markussen and Knutz (2013) describe a possible world theory that see design fictions as worlds that are created. The fictional worlds allow implementing speculative scenarios, systems and diegetic prototypes that the audience will then have access to and focus on connecting the presented worlds and values to current realities. (p. 2-3)

Similarly for Lindley and Coulton (2015) the story worlds are at the center of design fictions and they are used to prototype and explore ideas and technologies that do not exist yet, but can exist in the design fiction. Different medias for representing the worlds are the only limits that the new ideas have. Current technical or commercial restrictions and requirements does not have to exist inside the design fiction. The story world is the first step in Lindley and Coulton's three step design fiction definition as well: (step 1) a story world, (step 2) something prototyped there, (step 3) which opens up a discursive space. (p.1). Through the process of creating the fictional world and presenting a concept there, design fictions find a way to present the concept and the context at the same time (p.7).

They have also created a model that describes the relationships that reality, story and provocation have in design fiction (Figure 1). The reality layer includes the aspects that tie the design fiction to the reality, the familiar parts that help to bridge the fiction to present day. The story layer includes narratives and plots that takes the facts from the reality layer and stretches them to connect with the fictional. The provocation layer is the designed object, service or concept, that combined with the story and real aspects of the fiction, helps to open up the discussion and brings upon new perspectives. (Lindley & Coulton 2014, p.2-3)

The story worlds should be built with the audience in mind: the world should feel believable and coherent with small details fitting in together and making sense in all of the ways that the world is brought to life. Presenting the fictional world through various different applications forces the world builders to consider many sides and consequences of the choices that are made for the world. Through different entry



**Figure 1** A model describing the relationship between reality, story and provocation in design fictions (from Lindley & Coulton 2014)

points, like maps, videos, interfaces and blueprints, the audience can access and learn about the fictional world. (Coulton et al. 2017, p.8-9)

Coulton et al. (2017) argue that the world building in design fiction, borrowed from the world of cinema, literature and games, should focus on the different aspects of the world, like its society and interactions, rather than storytelling, its characters and plot. They see that a narrative is a defined story that happens in the world and therefore focusing on that only would narrow the scope and amount of different stories that a well built fictional world can include. (p.14-15) They don't deny having narratives in the fictional worlds, but see them as inputs into the worlds, not as the core (p.9). For them design fiction is "a 'world building' activity" which focuses on making a context for diegetic prototypes (p.1 and 5).

Joshua Tanenbaum (2014) has a different view on design fictions and stories that they tell: he sees that the narrative structures are used to communicate the fictional worlds and the possible futures that the fictions are presenting. "The logics of the story are what give a design fiction its power" and when applying new concepts and technology into the story, one has to define various ethical, social and concrete concerns, making the story and the design fiction coherent and effective. (p.1) Hanna et al. (2016) agrees that with their stories and narratives, design fictions can get the participants to engage on a personal level, making the interaction more meaningful and profound (p.5-6). Not having a story in design fiction, in Tanenbaum's opinion, turns the design fiction into some other approach utilising fiction, like speculative design. (Tanenbaum 2014, p.1)

Mark Blythe (2017) agrees with Tanenbaum on the importance of storytelling in design fictions and brings one more perspective to design fictions by combining with narrative theories. Since stories are used everywhere in everyday life and they are such an effective mean

of communicating, they are an important part to design fictions as well. (p.1) Quoting Brannigan (1992), Blythe writes that "narrative is a way of organizing spatial and temporal data into a cause-effect chain of events with a beginning, middle and end" (Blythe 2017, p.2) and from Barthes (1964), Blythe borrows the idea that all visuals are communicating narratives of some sort (Blythe 2017, p.4). Blythe sees fiction as a way to broaden our perspectives and through narratives encounter worlds that are different from ours in values, systems and cultures (Ibid, p.2). By understanding storytelling better, he believes that the design fictions created could become more detailed and thoughtful (Ibid, p.10). Similarly to Elsdén et al. (2017) world building for design fictions is creating the "social, political, environmental and technological" context for the diegetic prototype. While the world may be communicated in various methods, there is always a need and space for narrative as well. (p. 9)

### 2.3 Design fiction and research

Design fictions have been used for various purposes: as a tool for visualising and communication, for inspiration and as a research method (Lindley 2015, p.3). Lindley (2015) describes three types of approaches that design fiction had been adapted to: "intentional design fictions" that are aiming to raise discussion on the presented topic and prototypes, "incidental design fictions" that take on the feeling of a design fiction due to a provocative topic and the way of presenting it (for example the movie *Her*), and the third, "vapour fictions" that imagine possible futures but do not take a critical view nor explore social, political or economic values in them. (p.6-7)

Tanenbaum et al. (2014) see design fictions as a research tool that allows the audience to encounter, engage with and discuss about different concepts, future visions and consequences communicated through the stories in them (p.1). They have defined three roles that design fictions can take when exploring possible, in their example case dystopian, futures: (role 1) communicating future values and the consequences of the value choices made, (role 2) setting the mood of the audience towards changes, for example technologies, that future will bring and (role 3) helping the audiences with a "diegetic buffer" to deal with and explore emotions towards the possible futures that are presented. (p.2-4) To Lindley, design fictions have "the potential for a multi-dimensional relationship with research", since they do not focus solely on a material outcome but to produce insights, which often can provide information on the use of design fiction and on the topics being discussed. (Lindley 2015, p.4-5)

Knutz et al. (2014) have created a typology for design fictions that provides a set of five criterias to define and compare design fictions: what if -scenarios as the basic rule of fiction, the way of critiquing, the design aims and possible outcomes, the ways that the design fiction is



materialised and the aesthetics (p.11, table 1). Knutz et.al (2016) have also researched how fiction can be used in participatory design and how the different approaches affect the way of participating, for example through value fictions, perceptual bridges and pastiche scenarios that all help the participant engagement in different ways (p. 2-3).

Design fictions have been used as an approach in various projects involving different institutions. Brown et al.'s (2016) case with IKEA explored the possible future homes together with academic researchers and industry collaborators (p.1) and Hanna et al. (2016) interviewed local residents of Madeira for a set of design fictions to develop a community engagement platform (p.6). Ylipulli et al. (2016) worked with the city of Oulu in Finland, local companies and the university, developing a design fiction about the open access 3D model of the city and how it could be utilised in the future (p2).

## 2.4 Value fictions and speculative design

Design fiction has a lot in common with value fictions, speculative design, critical design and sometimes the terms are used to describe one same thing or a mix of the three. There are differences in the focus and approaches, but all of them have something speculative, provocative or critical to present in order to provoke reflection and discussion on the presented ideas, values, concepts or topics.

While design fictions do present and provoke thinking on societal values in the middle of technological developments, value fictions take values to the center of the fictions. Value fictions reverse the level of innovativeness and provocation between the presented technology and the social values, making scenarios with technologies of today combined with futuristic values to create discussion on the relating feelings and emotions (Knutz et al.2016, p.2). In the works of Anthony Dunne and Fiona Raby, the value fictions are often presented in physical format, which brings the reversed values to existence as an example to explore and reflect over (Ibid).

Design fictions are expected to have critical, questioning and exploratory elements in them like speculative design that shares many qualities with design fiction. Probably the best known practitioners of speculative design, Anthony Dunne and Fiona Raby (2013) state that speculative design has the ability to be the approach that works to find new perspectives to wicked problems and to inspire people to discuss and imagine better ways of doing things and living. *“Design speculations can act as a catalyst for collectively redefining our relationship to reality”*. (p.2) Discussions about future often focus on forecasts, while Dunne & Raby see that possible imagined futures could be used *“as tools to better understand the present and to discuss the kind of future people want”* (p.2). The What if - questions of the speculations provoke and inspire discussion and creates a space for it (p.3), exploring probable, plausible, possible and preferable futures (p.4-5).

According to James Auger (2013), speculative design has two purposes: to help the participants think of the future and to look at the existing practices with a critical perspective (p1). Speculative design is imagining futures by extrapolating systems from today into products and services that could exist in the future and alternative presents are depicted through different ideologies embedded into product design today (p.2).

To Dunne and Raby (2013), design fiction and speculative design are slightly different, even though speculative design creates fictional designs and the terms are sometimes mixed. They see design fiction as a narrower approach and focusing on new technologies and diegetic prototypes of them (especially on film), while their speculative design creates designs with many physical outlets in order to communicate their meaning and values to the engaged audience. (p.100) While Auger's (2013) work is around speculative design, he sees the practices of speculative design, critical design, discursive design and design fictions connected: there are similarities in the process and ways of approaching different topics with fiction. He discusses the used terms, with loads of meanings embedded in them that easily disconnect the designs from the everyday life for the participants: word 'fiction' is seen right away as not real and 'critical' is expected to take a stand against or thoroughly examine the article or idea at hand. The words affect the way the participants see and behave with the fictions. (Auger 2013, p.2) He even suggests that outside the domain of research where the concept of speculation is well understood, using term *“design fictions”* might be more effective, creating *“a form of verisimilitude where truths are blurred and disbelief is suspended”*. (p.9-10)

Elsden et al. (2017) have done experiments and research through design with Speculative enactments, an approach into developing and exploring speculative scenarios with participants engaged in them in a meaningful manner, by getting personally engaged and acting in the provided scenarios, like a performance, an event or a service. (p.3) Compared to design fictions, that Elsden et al. sees as *“simply constructing fictional narratives”* and *“future mundane”*, in the enactments the participants are in to create personal narratives through participating in the speculation (p.7 and 11). Speculative enactments goes beyond imagining and tries to create discussion by implementing participants into the speculation, and the designers are responsible to make that happen by making it motivating (p.2 and 5).

## 2.5 A Collaborative approach

For the last six or so decades the world of design has been changing as the role of users and other stakeholders has been changing from subject towards the role of a co-designer in the design process, or at least selected parts of the design process. Sanders and Stappers (2008) defined co-design, ten years ago, as *“collective creativity”* that is *“ap-*

*plied across the whole span of a design process*". (p.1) Co-design plays an important part also in the Design for Value project since it brings together various actors from maritime and manufacturing industries and the academic field to work on one shared aim.

To Marc Steen (2013) co-design is about *"open innovation processes, in which people from different organizations share and combine ideas and knowledge"* or *"involving users or customers as participants in the design process"*. Through different approaches the roles of designer and other stakeholders are blurred, usability testing challenges the researchers and designers to take the role of the future users while in participatory design, the users are taking on more the role of researchers and designers. (p.16) Steen sees that co-design can be an ethical inquiry to design, when the setting and atmosphere allows and encourages the participants to communicate their experiences and empathize with others' *"to jointly bring about positive change"* (p.22 and 28).

John Vines et al. (2013) discusses reasons for different stakeholders in design. The tradition of involving non-designers in the development process of new technologies and democratizing it, to give the end-users more power in defining what they truly would like and need, comes from Scandinavian participatory design. (p.1) Vines et al. list three main goals that have been prominent in HCI with stakeholder involvement: *"sharing control with users"* since it is seen as morally right to include the end-users in the process that is developing something for them, *"sharing expertise through boundary objects"* that help in creating a space for different views, perspectives and skills on the shared case (p.2) and *"individual, organisational and technological change"* (p.3).

Stakeholder involvement comes with challenges as well, as the methods for engaging people are various and the roles in the process, initiating and ideating, can be difficult to maintain and keep up with the original aims and agenda of the project (Vines et al. 2013, p.2). Vines et al. (2013) state that designing with the users in mind happens not only in the development process of new products and features, but also when designing the user involvement as the form of participation has a big effect on the outcome of it as well (p.4). At the same time it is important to realise who introduces the idea of user involvement and who is benefitting from it, since those have an effect on the mode and motivation of the participation (p.5).

## 3. Case

### 2030 – An Ecosystem Odyssey

#### 3.1 The context of D4V

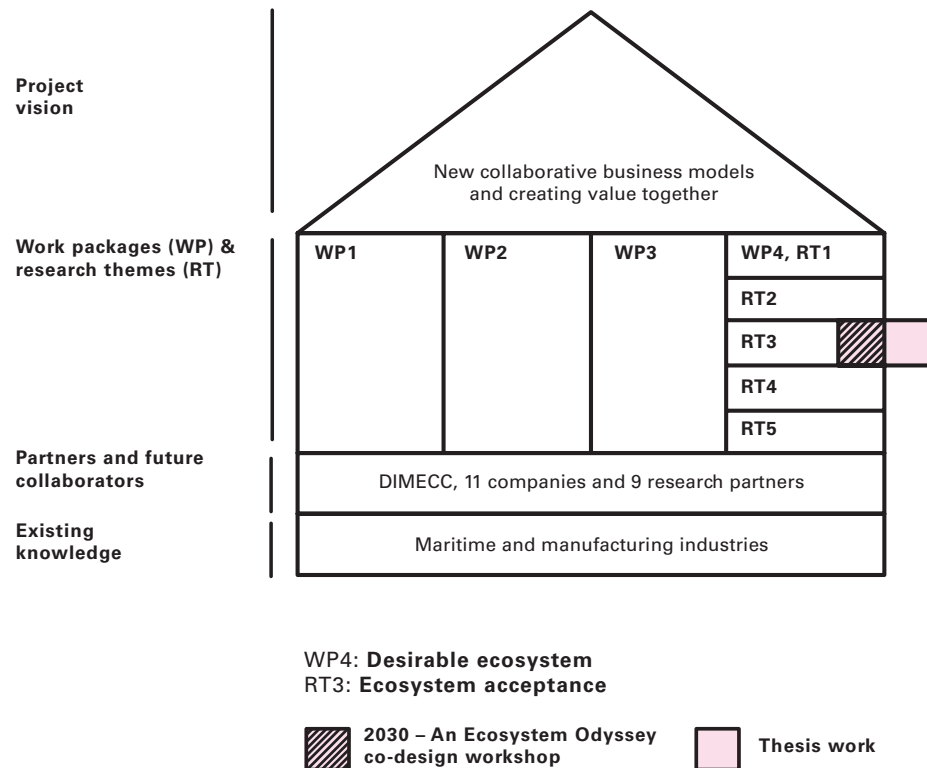
The 2030 – An Ecosystem Odyssey co-design workshop was organised as a part of the DIMECC Design for Value (D4V) research program which is focusing on new types of business models aiming to create business growth through digital disruption (<http://d4value.dimecc.com>). Digital disruption and new autonomous systems are changing the industry for the companies and employees and the human-technology relationship. The project is exploring door-to-door supply chains, autonomous systems and new technologies in order to create value together and find new models and partnerships, like an ecosystem, among the involved businesses from different parts of the supply chain. The project is organised by DIMECC and involves 11 Finnish companies from two industry branches, maritime logistics and manufacturing, and 9 research partners.

The project is divided into four work packages (WP) and our workshop belongs to WP4 focusing on the desirable ecosystem and to the research theme of Ecosystem acceptance (Figure 2). Three researchers from Encore research group from Aalto University are involved in the project, Prof. Virpi Roto and Dr. Yiyang Wu and Mariia Niskavaara. While the project was already running, I joined the project as a research assistant and participated in planning and conducting the co-design workshop for WP4.

A plan for co-design workshops is included in the D4V project plan for the WP4 with the aim to get the project participants to open up a discussion about the ecosystem and its acceptance among the participants but also with other stakeholders. The societal aspects and people are considered important in the project and the workshop is one step into exploring them and what acceptance of the ecosystem would mean and require.

The four hour workshop that is analysed in this thesis took place on 22nd November 2017 at Urban Mill in Otaniemi. With 9 participants from different backgrounds, six from company representatives and three researchers that are working in other WPs of the D4V project, the co-design workshop aimed at opening discussion on the changes that automation will bring to different aspects of work life. As the research theme of the WP4 is Desirable ecosystem and Ecosystem

## D4V project



**Figure 2** The structure of the DIMECC Design for Value (D4V) project with the co-design workshop and my thesis work situated into it. (The image idea is based on Marc Steen (2013) and adapted to D4V project)

acceptance, the aim of the workshop was to get the participants to discuss their views and to take a critical and human-centered perspective into the development process. Another aim was to define together the spirit and values of the ecosystem that would be developed (based on the current understanding) through the D4V project.

Design fiction was selected as the method for the workshop due to its ability to speculate and present possible future worlds while tying in the societal values to the discussion as well. Design fictions have the ability to imagine and to concretely present how different “*ethical and social challenges related to technologies*” would affect our lives (Ylipulli et al. 2016, p.9). They can critique and challenge the current structures of the society by presenting a speculative scenario of an alternative future and give space to various voices, like workers and women, asking whose future is being built at the moment. The research interest in the workshop was to explore the use of design fiction as a method in a workshop and business context.

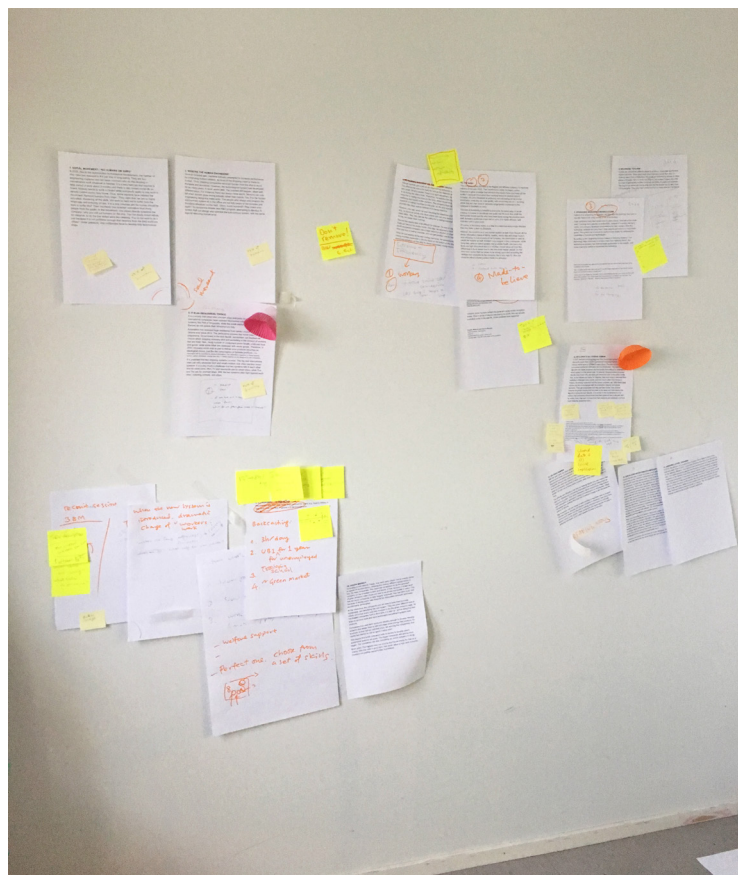
### 3.2 Creating fictions and building tasks

The design fiction writing process was started by 18 stakeholder interviews that were conducted by Yiyi Wu and Mariia Niskavaara with employees from the participating companies and researchers plus some external experts of maritime industries and autonomous systems of the future. The interviews focused on finding insights and opinions on future and automation, the changes that new technologies are bringing to future work life and on the human side and personal opinions on the autonomous future that the industry is heading towards. As the D4V project was starting at the same time, the focus of the interviews was kept quite general, so that the material from the interviews could be utilised also by other researchers and WPs in the project.

From the analysis of the interviews, frequently mentioned, contrasting and interesting topics and concerns were selected as starting points for design fictions. Those themes were then exaggerated and twisted, combined with societal values to bring in the human perspective to the fictions, to create speculative fictional scenarios of the autonomous future that the project and the industry is building at the moment. Around 30 fictions were written by Yiyi Wu, Mariia Niskavaara and PhD Sus Lyckvi from Chalmers University of Technology in Gothenburg, for further use and development. The first set of fictions were written, couple paragraph long descriptions of the imagined speculative scenarios taking place in the marine and automation context with extreme human values somehow embedded into the scenarios as well.

The fictive scenarios in our workshop are considered to be design fictions rather than value fictions, even though there were societal values embedded into them and often in a speculative way. By the definition of value fiction from Knutz et al. (2016), a value fiction presents





**Figure 3** An image from the task creating process which was started by posting the short written fictions a wall and discussing their connections to each other and the workshop topics.

familiar situations of today with provocations caused by altered, extreme values (p.2). The fictions in our workshop were speculating on the state of technology and the measures of efficiency in the imagined year of 2030, and the values were discussed from that future perspective.

I joined the project when the design fictions were already written and participated in going through the design fictions and developing some of them into tasks for workshop use. Emerging topics from the interview analysis and the project plan were kept in mind throughout the process. Data sharing, the value of human workers and the future of new kinds of jobs became the main perspectives to have in the tasks to get the participants of the workshop to discuss and consider the societal side of the ecosystem. The challenge for us was to get the participants to think beyond the technological and business consequences of the new collaboration plans and to consider the societal values as well.

Going through all the fictions, we grouped and combined them to find and develop the speculative scenarios for the tasks and ideated on how the tasks could utilise the fictions (Figure 3). We thought of different ways of presenting the fictions to make the design fictions more engaging, like a letter from angry workers' union, a video call from the ministry of data or a demonstration happening on the streets, and what kind of materials each task would need. At the same time we considered what would be the outcome of the tasks and how that would be relevant and motivating for the participants. Through discussing about the tasks many times and developing the ideas on our shared file on Google Drive, we created the first plan for the workshop, with three tasks and different ways to get the participants to encounter the imagined future in year 2030.

The aim for us when creating the tasks with design fictions was to get the participants of the workshop to start to look at the whole development process of an ecosystem and the changes that autonomous systems are bringing from the human perspective. The topics that came up from the interviews touched upon the use of data, new autonomous systems replacing people and therefore changing the job market causing many changes not only for the companies but also to all the employees and their families. One aim of the workshop was to bring the human voice to the tech and business oriented development process.

### 3.3 Developing the workshop and its storyline

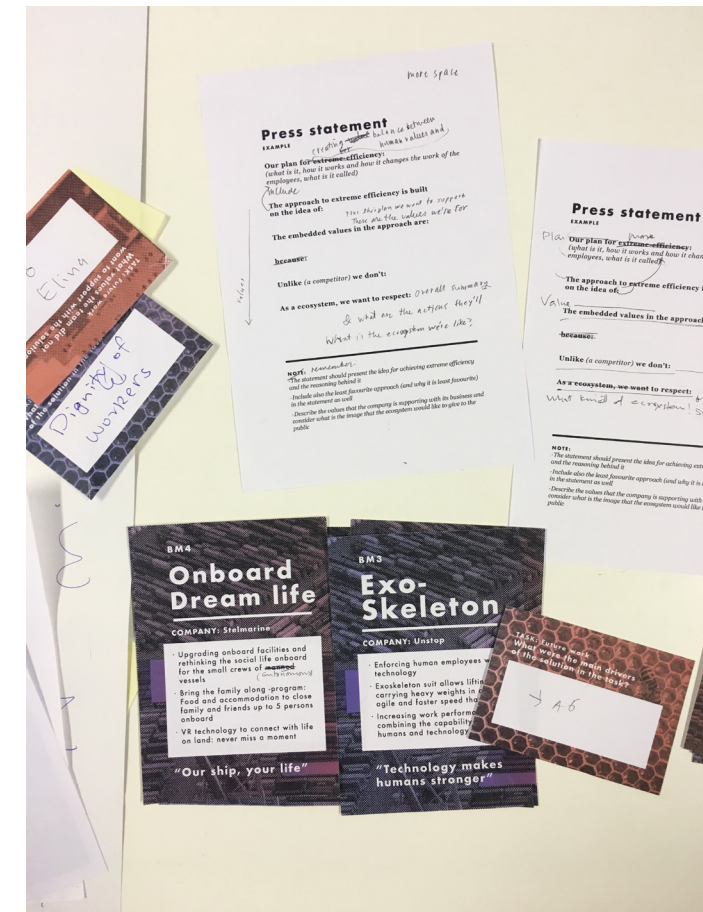
The first set of tasks were tested and evaluated in a pilot workshop with researchers. The pilot workshop was run in half of the time of the final workshop, but it allowed us to get valuable insights on what really works in the tasks and what is too complicated to understand (Figure 4). Comments from the pilot lead to many changes in the original workshop plan that we had.

After the pilot the workshop, the focus of the workshop was changed to be more ecosystem centered and aiming to find a shared definition for the ecosystem that the whole project has defined as one possible goal to reach. The design fictions in the tasks were described to take place in year 2030 where the ecosystem is assumable already working. In the pilot workshop that caused the participants confusion as the ecosystem itself was not clearly defined. Therefore we added one more task to the workshop: the new first task was about communicating ideas that the participants have of the ecosystem and defining what kind of values and key players the workshop participants would like to have in their desirable ecosystem.

Also the final concrete outcome of the workshop was adjusted to focus on defining the ecosystem. From each task of the workshop the teams would fill out insight cards about the ecosystem (key values, key players, guidelines for data sharing and responsibilities as employers) and as the final task, all the participants would work together and vote on cards they found important and those would be collected to a shared Ecosystem statement. We imagined that having the ecosystem as one focus point of the workshop would be motivating for the participants as well, so that the outcomes from the workshop would benefit the real ecosystem development process.

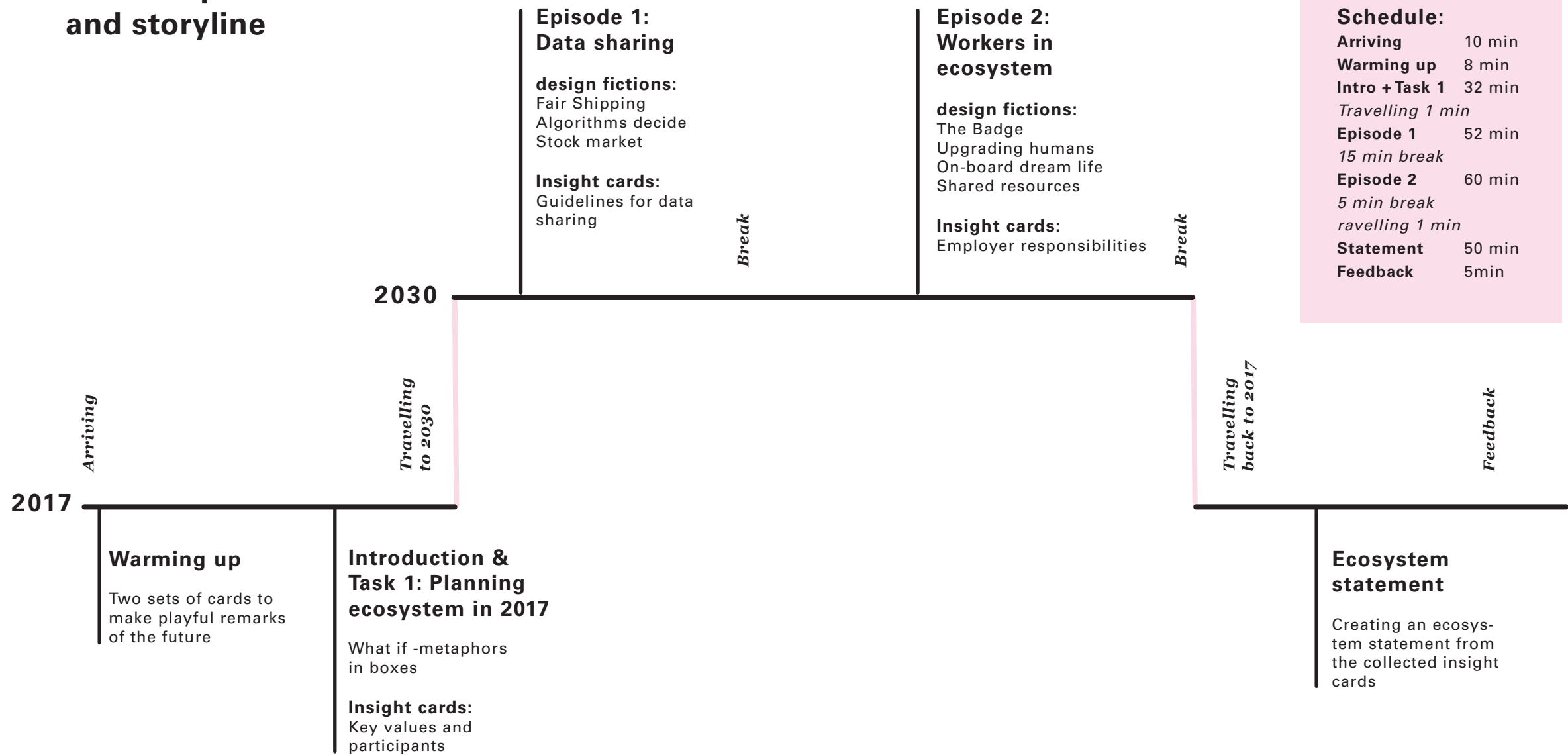
To combine the new focus of defining something for the ecosystem through the tasks and the design fictions taking place in 2030, we redefined the storyline of the workshop (Figure 5). In order to connect the tasks taking place in two different times, we developed a storyline for time travelling: the first and last tasks are taking place in 2017 and talking about the real existing ecosystem work and the two tasks in the middle, Episode 1 and Episode 2 are taking place in fictional year 2030 where the ecosystem is already established. The participants travel to 2030 to gather insights for building the ecosystem today. The new storyline affected also the role of the participants: in the pilot we asked them to imagine themselves as the future ecosystem partners once we travelled to 2030, but in the new storyline, the participants' role would be the same as today, D4V project participants and future ecosystem builders travelling to 2030 and back.

Comments from the pilot on how the tasks are given and presented got us to develop the tasks as well. Some of the tasks were framed as orders from the ministry or someone clearly ranking higher than the participants. The pilot participants felt that it was not motivating as they were forced to take actions, to free some of their data or to develop a care system for unemployed workers. The tasks were changed so that the tasks were given to the participants as systems and approaches to define. The reason for them to complete the tasks was to engage with the future and ecosystem in 2030 to collect insights for the development work happening in 2017. Also the language in the tasks was changed to create a more positive outlook, instead of tackling with



**Figure 4** The task materials from the pilot workshop were evaluated and developed to the final workshop.

## Workshop tasks and storyline



**Figure 5** The overall workshop structure and all the tasks. The storyline of the workshop included a time travel to year 2030 to gather insights for the project work happening in year 2017. The schedule for the workshop was tight and affected the overall mood in the workshop.



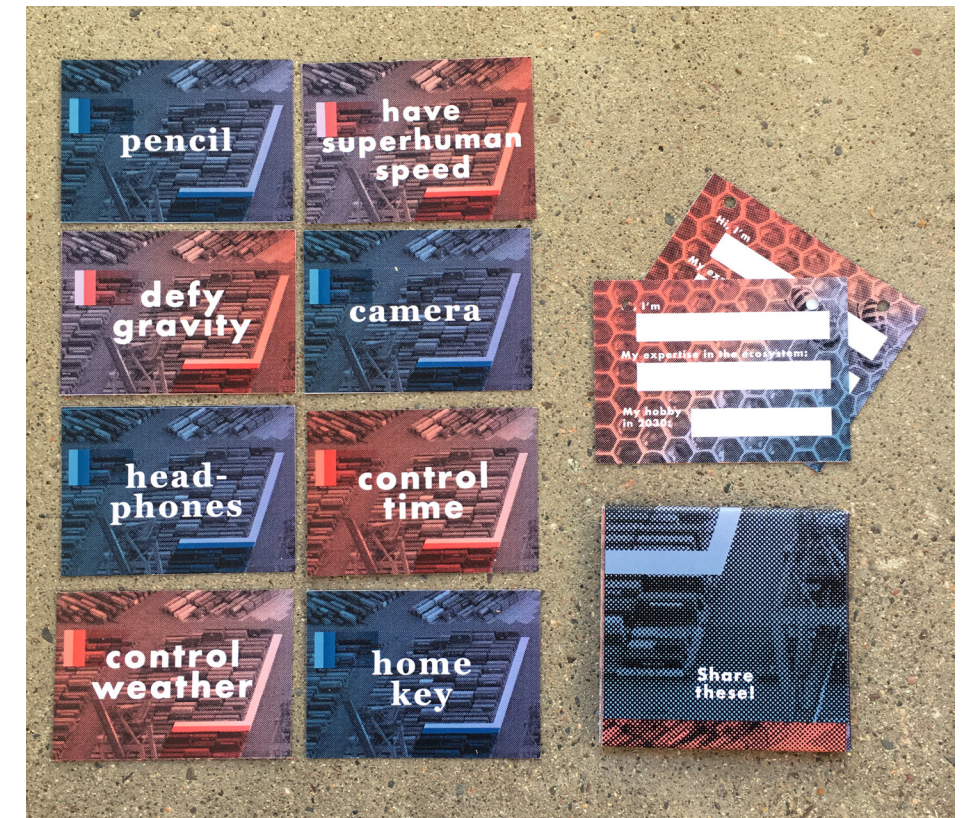
mass unemployment in the task in pilot, the new task was about finding approaches for redistributing skills.

We created different ways to communicate the storyline for the participants, starting from the invitation and guide, that were using the same visual style of the workshop but also asking the participants to already think of the year 2030: A ticket to the workshop that was sent with the guide (and would be used as a name card in the workshop as well) was asking the participants to list out their expertise in the ecosystem and as a playful addition, the future hobby that they would have in the year 2030. Expertise, instead of their current employer, was asked so that the participants would join the workshop and think beyond the company restrictions they have today and the hobby was a way to get them to start imagining what is possible in future. In the guide the participants were also asked to bring peach or blue socks to the workshop, to add an playful element.

The visual look of the workshop supported the storyline as well: all material related to year 2017 was using colour blue and materials for tasks in 2030 were peach. Presentations, task and design fiction cards, answering templates and extra materials were sporting the colours in the same way. For the time travel, the participants were asked to wear light sticks around their wrists as time turners and after closing their eyes, an audio message welcomed the participants to their destination. After the workshop, the participants that brought socks in the asked colour, were rewarded with Mars bars. All the participants got a souvenir, a set of question cards discussing the same topics as the workshop, a tool to continue the discussions and take the ideas back to their everyday actions.

### 3.4 The final tasks

The workshop started with a warming up task to introduce all the participants to each other and to get people into the workshop mood and tackling issues that are partly taking place in the future. For that purpose, we developed a task that combines the familiar items from today with technologies that only can take place in the future (Figure 6). The idea for the task was developed from a set of design fictions that were suggesting new technologies or approaches that were new ways of combining something familiar from today, like genetically modified eagle-pigeons as a precise delivery method for packages. For the task, two sets of cards, blue with items from today and peach with actions from 2030, were created and each participant was randomly given one of each. Those cards were then used when introducing oneself. The resulting actions got people to laugh and imagine how these would be taken forward, for example producing sunshine with a coffee cup, or using a home key to teleport. After the warming up, an introduction to the workshop went through the timeline of the workshop, the aims for the workshop (*“to set the basic principles and spirit on a strategic*



**Figure 6** The warming up cards, name tags and shareable souvenir cards in the workshop colors. The warming up task cards (on the left) paired familiar items of today with technologies of the future to create playful combinations and small snippets of how life could be in year 2030.



6.

Proposal 1 in data sharing in 2030

## Fair shipping

- The 'Fair shipping' movement is developed from 'Fairtrade'. More people request their products to be delivered in a fair way.
- Thus, the data of delivery process is needed to evaluate the 'fairness'.

7.

Proposal 2 in data sharing in 2030

## Algorithms decide

- In order to achieve an extreme efficient and sustainable supply chain process, a new delivery option is proposed.
- Instead of consumers, the algorithm decides when to deliver products.

Proposal 3 in data sharing in 2030

## Stock market

- Due to automation, ships and shipping become homogeneous.
- In the proposal, ship capacity can be invested as assets like in the stock market. 'Stocks' go up and down according to real time supply chain processes.

**Figures 6–8** Design fiction cards from Episode 1. The design fictions present future concepts that demand data sharing from various stakeholders. The task was to define what kind of data would be needed for the concept and who owns the data. Would they be willing to share such data?

**Figures 9–12** Design fiction cards from Episode 2. The design fictions present benchmarked approaches to employee wellbeing, health care, social life and training. The task was to start defining team's own approaches into the same topics and to consider the benefits of the approaches from the perspective of the employees, the company and the whole ecosystem.

8.

9.

HEALTH CARE & DATA SHARING

## The Badge

COMPANY: Armada

- Health of the employees is seen valuable, since workers with minimal stress levels are considered to be more efficient.
- An agile health care system is made possible by workforce monitoring.
- AI collects also data about the ecosystem activities. It analyzes and distributes data to find the best and efficient solutions to benefit all: workers, companies and the ecosystem.

10.

TRAINING & CHANGING JOB DESCRIPTIONS

## Upgrading humans

ECOSYSTEM: SeaTech

- Technological changes add unpredictability to the worker's lives. They are also at a risk of losing their jobs to new innovations in the industry.
- Companies in SeaTech are required to retrain the employees to other tasks instead of laying them off.
- SeaTech is developing exoskeletons that allow employees to work with physically more demanding tasks. Instead of removing human workforce, SeaTech is focusing on upgrading them.

SOCIAL LIFE & WELLBEING

## Shared Resources

ECOSYSTEM: gardEN

- Alternative economic systems inspire business ecosystems globally. GardEN is based on the idea of sharing resources and joint property.
- The incomes of each company benefits all: gained profit is shared evenly among ecosystem companies. Also workers have no fixed salaries: the salaries are dependent on the incomes of the ecosystem.
- Workers are a shared resource of the ecosystem: Shared knowledge enables workers to move flexibly between different job descriptions inside the ecosystem.

ALTERNATIVE ECONOMIC SYSTEMS

## Onboard Dream life

COMPANY: Stelmarine

- The crew in the few manned ships is smaller from past times. Because of the lack of social life on long voyages, the jobs are hard to fill.
- To attract crew, Stelmarine enhanced the social life onboard: the crew members are allowed to bring 5 members of their families or friends to the vessel for the duration of each task. Food and accommodation are provided to everyone.
- Also good contacts to the shore are made possible by VR technology.

11.

12.

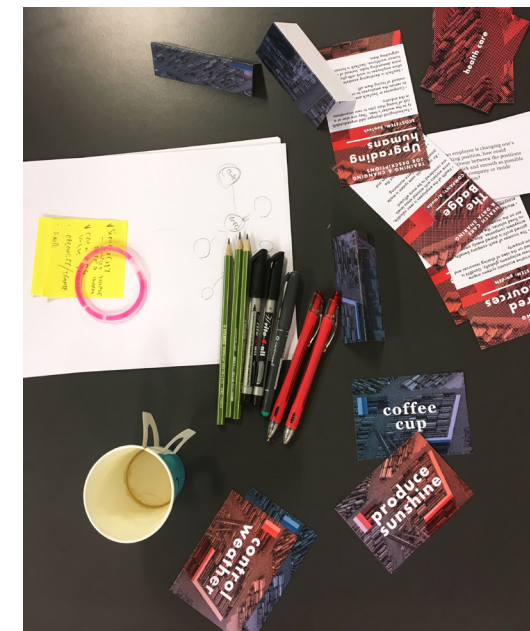


level based on which the ecosystem will be developed further in D4V” in the workshop presentation), and the method of design fiction that would be utilised (“*not solutions to implement. They are used as provocation to trigger and facilitate discussion on complex issues.*”).

The first task, taking place in 2017, started with a what if -box, that encouraged the participants to describe their desirable ecosystem as if it was a building, dish or a movie. The aim of the task was to challenge the participants to talk about ecosystems in other than business terms to get to the underlying values by asking for reasons for the aspects of the ideated object of the metafora. In this task, also the insight cards were presented and the teams listed the key values and key players that they see important in the ecosystem development. The insight cards were collected to each teams’ own ecosystem board, that would be used in the end when making the final statement.

After task 1, it was time for time travel and Episode 1 taking place in year 2030. The task presented three design fictions, Fair shipping, Algorithm decides and Stock market, that are all presenting a future system and some consequences of them (Figures 6–8). The design fictions provided a technology or a system that is used in a new way, resulting in a perspective through which the participants could discuss the concept and the use of data. The design fictions were read out loud and accompanied by a presentation with highlights of the systems. The teams were given task and design fiction cards and asked to define what kind of data would be required for such a system, who has the ownership of that particular data and if they would be willing to share it. The outcomes were presented to the other teams and the insight cards for the task asked the participants to define what kind of data sharing guidelines they would see valuable in the ecosystem development. Sharing data and worries about it were topics that came up in the background interviews and through the design fiction and task, we wanted the participants to have a context and chance to discuss their thoughts on the topic, without straight connection to the company actions and policies of today.

Another task in year 2030 was Episode 2, Workers in Ecosystem. The task presents a situation where the ecosystem is already established and as autonomous systems and new technologies have changed the work environment for people. The participants are asked to check benchmarkings from other ecosystems and companies and then start ideating on what kind of approaches they, as future ecosystem participants, would be ready to put into action concerning the employee well-being, health care, training and employer responsibilities. Four design fictions, titled The badge, Upgrading humans, On-board dream life and Shared resources present extreme actions that have been taken by the competitors (Figures 9–12) and through four questions on the answering template, the teams consider what they would see relevant and feasible in the context. The aim of the task was to get the participants



**Figures 13–14** The workshop space, presentations and recording devices are ready for the participants to arrive (top) and left behind after the workshop (bottom).

consider the relationship between human values and extreme efficiency and to consider what kind the consequences of efficiency and automation they would be ready to tolerate. On the insight cards the participants list out employer responsibilities that would be good to take into consideration in the future as the work life will change due to new technologies. After the task outcomes were presented, the participants travelled back to 2017 to continue the development of the ecosystem.

The final task of the workshop aimed to combine the insights from other tasks. Participants received stickers to use for voting the most important insights in each of the four category of the ecosystem statements (the categories were Key values (4), Key players (5), Guidelines for data sharing (3) and Employer responsibilities(3)). Through combining some insights and voting for the most important ones, a shared Ecosystem statement was collected from the insight cards. Ideas and suggestions that still remained undefined or didn't reach a common understanding among the participants, were kept on a question board and could be continued upon later.

### 3.5 Workshop reflection

While the feeling after the workshop was that the everything went mostly smoothly, there are many practicalities in the workshop that were a learning point for us. One big one was timing and the amount of material included in the workshop (Figure 5). The breaks between the tasks were quite short and the time reserved for each task was too short for the material in the tasks. Too much time was used for understanding the situation and getting to work with the task itself. Elsdén et al. (2017) state that too fast changes between the different design fictions might break the participant engagement (p.8). Reserving enough time for the engagement is therefore vital in a workshop, especially when using some sort of fictions as a method.

Elsdén et al. (2017) also present an idea that a tight script for the tasks and the whole workshop limits the ways the participants can join in and their role in the whole workshop (p.8). Since our schedule was tight and the tasks full of material, the actions available to the participants were limited to the ones we had defined for them. That was a challenge for us and for the participants. We imagined the design fictions setting the participant imagination free and ended up creating restricting roles to them. The participants were confused with the roles presented to them and instead of challenging the speculations in the tasks, they obeyed and played along what was defined for them.

The aims of the workshop ended up changing through the process of starting to create the fictions, through the pilot workshop and the resulting changes to the workshop. As a starting point, the aim of the workshop was to create space for discussion while in the end, the focus moved to defining the ecosystem and being more concretely useful in that sense. By changing the tasks to focus and lead to solu-

tions, we changed the focus without noticing, as tasks that are asking for solution do not encourage discussion as much as a task asking for contemplation would. The framing of the task should be in line with the aim of the workshop as well. In our case, for example in Episode 1, the participants were asked to define how a future stock market on ships would work, even though our aim for the workshop was to focus on the societal values that the future changes and advancements with technology will bring. In a way, we were asking for a different thing that we imagined would be the outcome of the task. What and how it is asked has a straight effect on what is the outcome. The discussion in Episode 1 was meant to be about challenging the current system and we imagined that through the discussion, the participants would think of a way to make a working system. But creating assumptions for the system and defining it further didn't lead to a discussion that had something valuable to the participants or the real project development work.

Also the selection of participant should support the goal of the workshop. If a workshop is aiming to set the spirit and future steps for collaboration among various companies, the participants should be from a level that have the power to make such decisions as the representative of the company. If not, the outcome of the workshop has a lower chance of really being used in future.

## 4. Analysis on the roles of design fictions

Chapters 4.1 and 4.2 present the analysis findings grouped into ten roles that the design fictions served. The chapter 4.1 focuses on organisers and what kind of roles the organisers of the workshop gave to the design fictions through the process of developing the workshop. The findings are collected through analysing personal and shared workshop planning notes, two organiser interviews, the materials and presentations created for the workshop and pilot workshop feedback. The chapter 4.2 goes through the analysis findings on the roles how design fictions served the participants in the workshop discussions and tasks. The materials of the analysis include the workshop discussion transcripts and participant feedback forms and interviews.

### 4.1 From the organiser perspective

#### 4.1.1 Offering a platform for values and perspectives

In the planning phase, the fictions got the role of a platform for us to suggest and present different perspectives and bring them to the workshop. As it was the goal for our workshop to get the participants to discuss the societal values of the new changes that the ecosystem and new technologies will bring, the fictions offered us the way to propose such values into the tasks and discussion.

In Episode 1 and Episode 2 the fictions are presenting scenarios that are taking a stand on the values and topics that came up in the background interviews and stretching those to extreme to make the scenario speculative. For example in Episode 1 with Fair shipping, the fiction is already suggesting that the customers are requiring more fair system in every possible way, embedding the idea that fair is good and something that the participants should take into consideration. In Episode 2 for example with the design fiction The badge, the idea of taking care of one's employees is taken to the extreme where everything is tracked and interest for the efficiency of the work is valued more than the human. In Episode 2 all the fictions are questioning the ways extreme efficiency and human values are combined, presenting different perspectives on the responsibilities of companies in the changing work life in the future.



Figure 15 Five roles of design fictions, defined from the organiser perspective.



The design fictions act as a kind of a disguise to get the participants to discuss the topics that were defined to be important when thinking of the D4V project: the fictions are presenting societal consequences that the technological developments and the decisions made today might have in the future. The design fictions are bringing forth something speculative to discuss, to create an open space for the participants to consider the presented ideas further.

At the same time, the design fictions ended up being a platform for our views of the D4V project and the idea of an ecosystem as we saw it at the time. The fictions are taking place in 2030 and assuming that a cohesive ecosystem has been established, valuing the human workers over extreme efficiency. Those not being straight from the plan for the D4V project, the ideas embedded in the design fictions are reflecting how we, the organising team, understood the project goals at that moment.

#### 4.1.2 Promoting the workshop

The design fictions are used to get people excited about the societal side of the project, while the promised goal of the workshop is tied to the business side and the structures of the imagined ecosystem. The method of design fiction is introduced as an experiential approach to define the topics in a imaginative way: travelling to 2030 and interacting with fictions to “*discuss the values that are relevant to the development of the real ecosystem*” (from our guide/invitation).

Already the first invitation and the guide that was sent to all the registered participants promised a lot for the workshop: chances to discuss opinions and develop shared views of the future, while focusing on the human values concerning the ecosystem building. The presented themes of the design fictions (“*the potential use of data sharing, the future of work, and the balance between extreme-efficiency and human values*” from the guide/invitation) are communicating the focus points of societal values that the workshop will include and the descriptions of the method are creating expectations by promising something more than a basic workshop. The design fictions were used in the role of promoting the workshop and for us organising the workshop, design fictions were making the workshop different, more special.

#### 4.1.3 Setting roles for participants

In the workshop, the design fictions positioned the participants as actors in the presented possible world of the design fiction through the way they were set and what was defined in them. The design fictions present the world in 2030 where an ecosystem has been established and in the tasks, the participants are expected to act as a set of ecosystem participants collaborating in the imagined ecosystem. For example in Episode 2, the participants are expected to be socially responsible actors defining employee health care and wellbeing systems. The de-

sign fictions and the tasks were placing the participants of the workshop into fictional situations that they should define something for.

In the tasks the participants were expected to act in the role that was planned for them, but we didn't manage to communicate those roles well to the participants and that caused confusion with the tasks. In the workshop many of the participants took an outsider's approach to the tasks, since the ideas and embedded values in the fictions felt as something already defined and decided for them. The storyline of the workshop sends the participants to year 2030 to take part in tasks that are happening in the context of the ecosystem that has been established by then. Since the fiction and task come with the assumption that an ecosystem will be created from the D4V project, the participants are assumed to take the role of an ecosystem actor without mentioning it in other than “*your ecosystem*” notions. The notion on the soon-to-be ecosystem was clear to us organising the workshop, but for the participants from different companies and different participation modes and background in the D4V project, the idea of an ecosystem is not defined.

#### 4.1.4 Facilitating and structuring the tasks

In the process of planning the workshop and the tasks, the design fictions became the center of the tasks: the design fictions bring in the context, the speculative aspects and more perspectives on the topic of the task. The design fictions help in facilitating and structuring the tasks as the fictions are utilised to get the tasks done.

The design fictions present the context of the tasks and in that way engage the participants with the fiction and the imagined context of 2030. In Episode 1 the design fictions are presenting consequences of technical advancements taking place in 2030 and in Episode 2 different approaches on health care and wellbeing that the competitor ecosystems and companies are taking. The participants are asked to work on the tasks in those contexts. In the warming up task the design fictions also acted as an introductory element. Even though the warming up didn't include one specific design fiction, the task lead to small sentences about future. Those small bits of the 2030 were small introductory elements to the year that the workshop would discuss, but also to design fiction as a method.

The design fictions and how the participants are asked to approach the fictions give structure for the task. In Episode 1 the participants are asked to start defining the needed data for the system and the given consequences (the design fictions being non-challenged backgrounds in the task) while in Episode 2 the fictions are presented as material for stimulating ideation and raise discussion (the design fictions as applicable inspiration). The outcomes from the task are dependant on the way the task is set out and in the workshop all the tasks were asking the participants to take some sort of action utilising the fictions somehow.

The speculative ideas and topics brought in by the design fictions facilitated also the discussion in teams. For example in Episode 2 the discussions might not have been straight on the design fictions, but on the topics of health care and wellbeing into which the design fictions brought different and extreme perspectives. The design fictions help in communicating the focus and topic of the tasks for the participants to stick to also when thinking of their D4V project. But even though our aim was to create a discursive space for the participants to discuss the themes from the fictions, the tasks were focusing more on creating actual systems than on discussing opinions and worries. Aiming for concrete outcomes didn't lead to broader discussions on the topic, while more abstract focus and setting in the task could have inspired more discussion. In a way, in the workshop the design fictions turned from a speculative tool to a tool for co-design.

#### 4.1.5 Building the storyline

To connect the tasks taking place in 2017 and the tasks utilising design fictions in 2030, the workshop had a storyline. The storyline sends the workshop participants from 2017 to year 2030 to collect insights about ecosystems through the tasks. The design fictions participate in building the storyline by presenting the scenarios taking place in 2030 and telling about the imagined future.

The time travelling and connecting tasks in the real context of the D4V project with the tasks discussing an imagined 2030 ecosystem bring challenges in combining the results from both. The storyline helps to bridge the design fictions to the work that is being done today, but not completely as we didn't manage to fully communicate the storyline to the participants. The storyline acts as a link to the whole project and through it, the design fictions become more relevant to the D4V, kind of proposing questions of what if these scenarios would really happen in 2030. One participant comments the time travel in the feedback interview:

*“What was good was that we jumped to the future and in a way looked at today from that perspective and it makes it easier to look at a bigger picture”.*

At the same time the link might have caused also confusion in the participants, since the participants have their own perspectives and expectation on the D4V project and the scenarios presented by the fictions might not fit those at all. The design fictions are of course only speculative, but still add a layer of confusion to the tasks, since the participants were promised work on the actual project as well.

## 4.2 From the participant perspective

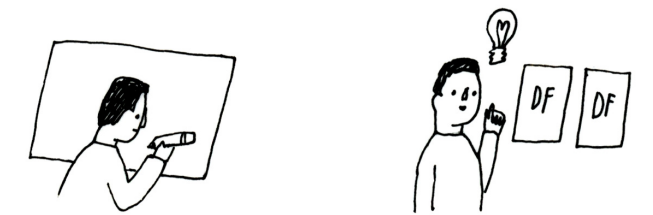
### 4.2.1 Providing a starting point

In the tasks the design fictions were seen as the starting point: the teams started out the tasks by going through and trying to establish a shared understanding of the design fictions and their connection to the task questions. In Episode 1 the design fictions present an idea to define further and the teams start building the task, creating needed assumptions for it to work. Those assumptions are the first steps on defining the tasks answers and how the system works in each case. The concept from the design fiction is left to the background and used to discuss the theme of the task, like data sharing in Episode 1. For example one team in Episode 1 works with a design fiction about algorithms delivering wines: the team starts to define the data that is needed for the algorithm to do the given task, but also broadens and discusses the concept further than what was defined in the design fiction.

If the idea in the design fiction is not understood, getting on with the task becomes tricky, like what happened with our Stock market fiction that the team tried to understand for most of the time of the task. None of the participants in the team were experts of stock markets and therefore a system built on that was too tricky to frame in such a short time. In the feedback interviews it came across that participants from the Stock market team did not consider the discussion on the assumptions meaningful, even though the team was defining and discussing the topic of the task. Therefore recognising the previous knowledge or preparing the participants for such a topic in a fiction would allow them to play around and focus on the original aim of the task, and get the feeling that they are on top of it. Also considering the amount of detail in the design fiction is valuable, the approach of suggesting something blurry to define only works is the participants have sufficient knowledge of the topic or interest into it.

The design fictions set the context for the ideas and ideation, the teams were interpreting the fictions and ideating further by own examples that could take place in the context. The design fictions are also setting the theme and topic. In the task discussions during Episode 2 the design fictions come only occasionally up, but the teams are ideating their own approaches based on their own experience and opinions in the same setting and theme. Having the context from the design fictions also provided a shared starting point for the task, something shared to a topic that might raise different opinions once people start interpreting them with their own knowledge and interests.

The task questions directed the participants to focus and start on some specific part of the design fictions and the topic. In Episode 1 all design fictions were situated in the same context of wine shipping,



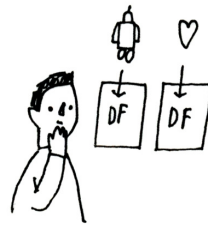
1. Providing a starting point



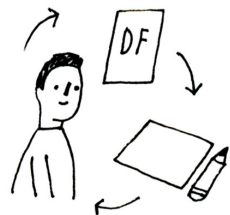
2. Introducing perspectives and ideas



3. Imagining future – reflecting the present



4. Presenting a platform for embedded values



5. Making connections

**Figure 16** Five roles that design fictions serve in the workshop, defined from the participant perspective

wide enough to have the participants to think of different sides and actors in it, and at the same time, at least slightly limited in its broadness when focusing on wine industry and usage. One participants comments in the beginning of the task:

*P (=participant): “this is the context and this is the task”*

while looking at the design fiction card and the task card before starting the task.

#### 4.2.2 Introducing perspectives and ideas

The design fictions are seen as new perspectives to the task topic, making the participants to look at the task and the case from different perspectives that they consider relevant. Also in a speculative manner, the design fictions are seen as new frameworks that challenges the current system. The participants start to consider different perspectives to the topic in order to ideate something new while reflecting also on the way things are done at the moment.

In Episode 1 the three fictions are seen as new approaches and perspectives on how the business or supply chain is organised and through the task the participants start to explore different aspects of the examples in order to provide an answer, or a solution to the task. One team discussed the design fiction about Fair shipping and through defining the data, the team considers the topic of “fair” from various perspectives: starting from fair trade of today and moving on to fair for economy and for the customer.

In Episode 2 the design fictions provide examples and the game board the context onto which the participants start to create the answers through the questions. The design fictions presenting benchmarkings from other ecosystems are connected to the task questions and reviewed as examples of each four questions. After reviewing the design fictions as example cases, the participants list out points why the design fictions would and would not make sense and what would be the troubles of having such a scenario in use:

*P: “(reading the question of healthcare) I do not know. I understand the badge thing. But is it really the company’s responsibility to provide health care? In our (current) socialist system, half is from you and half from the government, not necessary by the companies”.*

The speculative design fiction of the Badge prompts the participants to look at it from various points, not only from the point of availability but it if would be good and accepted practice and if they would be willing to go into such lengths with a health care and efficiency system.

The design fictions presenting different approaches to the given topics were also a chance to discuss them even though all participants would not agree with the approach. For example in Episode 2 with design fiction Shared resources about redistributing skills, the participants continued to discuss the topic and different approaches

to it while some of the participants did not see redistributing skills as a solution in the future. But it was still a chance to hear and discuss different opinions and viewpoints into the shared topic. In one participant feedback interview, it was mentioned that for some participants the discussion during the tasks brought new ideas and perspectives to the table, like the worker perspective into automation in this case.

Through the task and developing the ideas further, the participants are continuing the design fictions creating material and systems that are taking place in the future with technology that is also beyond the technology today. For example one team in Episode 2 is developing their idea of health care by using the idea of the badge, from one design fiction:

*P: "So it would be like health care on demand and then also predictive, like for example this badge, it is like a monitor of how and how much you drive and then it kind of predicts the next oil change, like people were like (vehicles)".*

At the same time, the design fictions are also inspiring and prompting the participants to think beyond the tech and the applications we have today. By adjusting the fiction to fit the values and aims of the team, the participants start to construct their own fiction, their own benchmarking from the future. By discussing the design fictions and the problems or conflicts in them the teams are using the design fictions as inspiration for further thinking.

#### 4.2.3 Imagining the future – reflecting the present

The design fictions are helping the participants to reflect on the actions of today while also imagining the future beyond the current challenges. Having the context of the design fictions in 2030 makes it possible and acceptable to assume things about the future but at the same time, the design fictions bring up examples of something concrete that could take place in the future.

In the workshop the design fictions were used as a platform for reflecting today's actions and contrasting one's own knowledge to the fictional scenarios happening in the future and how they might be changing in the following years. While discussing the tasks and the future scenarios, those are evaluated in the light of the actions and examples from today. For example in Episode 1 the participants are discussing the stock market from the design fiction through the actors of today:

*P1: "Let us imagine, if you are buying something from Amazon, will they have their own ships?"*

*P2: "Amazon have their own ships already."*

*P3: "But, could you get them as far as their services as end customers".*

Similarly in Episode 2 one team is thinking about redistributing skills through how it is done at the moment:

*P: "This is like the problem that every company have their core skills that they don't want to get rid of in the future either, otherwise they'll lose their competitive edge, so I just don't believe in such skill sharing because it comes with a problem"*

And with the design fiction Upgrading humans, the example is linked with similar actions that is already happening and therefore it is quite likely to happen in the future as well:

*P: "So for example this upgrading human, it is for example in USA very usual that people take different kinds of pills for mental performance, smart pills kind of, and I think there will be more and more of this upgrading humans".*

Since it is difficult to imagine the future without getting stuck to how things are done today, the design fictions are presenting the participants something concrete about the future to evaluate and discuss. While it is impossible to define exact actors or collaboration systems for the future, for example in Episode 1 with Stock market, the team starts to discuss the possible participant groups that would be needed to participate in a system to make it happen. The ideas in the task are not detailed, but the fictional scenario forces the participants to start defining even rough, possible ideas of the given future. The design fictions are concrete ways to think and discuss about future that is otherwise vague and unknown.

The design fictions also allows the participants to think beyond reason and throw out all kinds of ideas. By having something fictional from 2030 to show, the design fictions give an example that even though the tech is not available yet, it is ok to suggest something beyond that. By the examples set through the design fictions, also the task outcomes can assume things about future also in quite abstract manner: for example in Episode 1, instead of defining closely the important players in the system, describing the types of possible players and tech, even with examples of today like *"google like players"*, is useful and can lead to important discussions and findings. In that manner, the design fictions are pushing the thinking beyond what is known today. The design fictions taking place in the future provide an open space for ideation, since nothing can be known for sure. Hanna et al. (2016) states that design fictions support uncritical, *"imaginative leaps to the unknown"* and the findings from such a phase can be then reviewed critically later on for further use in the design process (p.6).

#### 4.2.4 Presenting a platform for embedded values

For the participants, the design fictions presented themselves as something that has been decided already, presenting and building ideological choices that the participants thought they are expected to take in. For example couple comments from Episode 2 reflecting on the task they were given and trying to figure out what is embedded in the given design fictions and the task starting points:



*P: “But we don’t know what is the vision either, that what is wanted, do we want employees with super-talents or broad talents?”*

and

*P: “This is contrasting.. in a way this strategy and this is decided already, so this redistributing skills is already decided, kind of like given”.*

The way the task is set makes it seem like something has been decided and the feeling is supported by the examples from the design fictions. The design fictions are seen as suggestions of something that is already decided for the participant.

The design fictions come with embedded ideologies and values, like in Episode 1 with Fair shipping that is building on the same ideology as Fair trade today. The connection to Fair trade today allows the Fair shipping system to be developed on the existing system and the ethos of Fair trade was kept as it is, even though the world would be different in 2030. Such links in the design fictions gets the participant to reflect on the knowledge from today and there is a risk that the context of the fiction, in our case 2030, is forgotten.

As mentioned earlier, the design fictions are providing a chance to discuss different themes and perspectives to the topic while presenting already one view into it. While the design fiction is presenting only one perspective, the participants should be encouraged to look for other ways of working if the given perspective is not favoured. In our workshop, changing the fictions and preconditions given in them was allowed, but due to our limitations in communicating it and the lack of time in the tasks, the participants did not start to challenge the given much. Instead they ran through the task with the given point of view to get the task in the workshop done, whether agreeing with it or not.

The design fictions carry assumptions about the ecosystem and how it is functioning as a cohesive system which caused confusion and less interest towards the workshop if the participants did not agree with the idea. Those embedded assumptions and opinions written into the design fictions and tasks ended up affecting the way the participants confronted them: discussing about somebody else’s future and situation and positioning themselves outside the task. In such cases, a chance to redefine things in the fiction for the task is important, so that the participants have the feeling that they still have the possibility to decide their own participation, especially in workshops that aim for defining something for real context use as well.

#### 4.2.5 Making connections

A role that the participants seemed to expect from the design fictions in the workshop was that of making connections between the tasks, the workshop goals and the D4V project. As the design fictions managed to

serve the role only partially in our workshop, it lead to confusion and less motivation in the tasks.

The design fictions and the tasks could participate in building a holistic and understandable set for the participants to get into the topic and helping to build a connection with the aims of the workshop as well. If there is no connection or it is communicated unsuccessfully, the task is considered irrelevant and people easily get unmotivated to work for it. During the tasks in the workshop, the participants kept checking the task questions to set the aim of the task, to be clear on what is being asked of them towards the provided design fictions. The aim of the task affects the way the task is set and connects with the design fictions and also the imagined task outcomes should support the overall goals of the workshop to make the workshop experience coherent.

The connection between the task and the design fiction should be communicated well for the participants. In Episode 2, clarification on the role of fictions and connection to the task questions was needed, participants were checking the purpose of the different cards that were provided for the task:

*P: “And these all are only stimulation”*

referring to the design fiction cards. The role of the fictions was not clear for another team either, they were not sure on how to work with the fictions, and since they didn’t know what to do or what to focus on, the amount of topics and material in the task became overwhelming. The fictions may have been clear but their relation to the task and extra questions made the task messy for them. The task materials should help to guide the task with the design fictions: continuing the mood of design fictions also visually and helping the participants to complete the task. The amount of material in the workshop should be connected to the time that there is for the tasks, in our workshop the amount of material was too high for the time that we had and it caused the participants to get confused and stuck with all the materials and their reasoning.

The overall storyline and the aims of the workshop were not clear to the participants and that also affected the attitude towards the tasks and the design fictions. From the discussions during the tasks, it seems like the tasks were done for the sake of the workshop: the participants are strictly sticking to the questions to get them completed and have divided the time accordingly (5 minutes per question) as well. Based on comments from the participant interviews, many of the participants noticed the overall storyline and connections between the tasks only during the last task of combining the insights cards into one shared ecosystem statement. For the participants the insight cards became kind of a way to summarise the tasks, but many commented that it would have been good to be aware of the overall outcome of the workshop (the concrete one being the shared statement) all through



the workshop. Another participant mentioned that in the end, when combining thoughts from the whole project it felt like

*“Ok let’s try to put everything together and let’s see how we make it to fit”*

instead of aiming for and building something from the start throughout the whole workshop. The comments makes it clear that the ways we used for communicating ( i.e. stating it in the starting presentation out loud and with an image and the insight cards that were collected together next to the final statement board) the overall storyline and its role in achieving the workshop goals were not given enough attention by us or the participants. The way the tasks were written and staged didn’t promote a connection to the main storyline either: they were seen as separate tasks and the teams were focusing on providing quick answers to the given questions without stopping to think about an overall approach of what they are creating. The task had no explanation on how the answers should form their own view on the ecosystem, something unified or a concept building on the values they saw important. Something in the task and task materials should have suggested a more holistic view on the task or a connection to the overall goals.

The missing link to the storyline led also to a weak link to the workshop aims and the whole D4V project which must have had an effect on the motivation and the attitude towards the tasks and design fictions. Many of the design fictions had the embedded idea of an ecosystem that would be built from the D4V project, but it was not made properly clear by in the workshop that how the tasks and task outcomes are connected to the real project. At the same time, since participants had various views on the ecosystem or future collaboration, the embedded ideas in the fictions might have felt foreign and built distance since their purpose was not communicated well. One participant comments the missing goals in feedback interview that the feeling of not having a proper goal and not knowing how to get there made the workshop feel incomplete in the end. Finding a connection between all aspects of the workshop helps also the participants to position themselves towards the task and the fictions.

## 5. Roles and reflection

The analysis led to all together ten roles that the design fictions serve or were used for. When combining the roles together, there are three actions that those roles can be divided to: some are setting the scene, some structuring the tasks and some embedding values and ideologies.

### 5.1 Setting the scene

For the organisers, the design fictions were a way to promote the workshop and to get people excited about the topics, and at the same time it played an important part in the storyline that connected the two years of the workshop. For the participants, one role that was expected of the design fictions, but is questionable how well that in the end happened, was for them to build connections to the tasks, the overall workshop and background project goals. The design fictions can help in establishing and presenting the context of a workshop.

Design fictions has been often often in showroom-like contexts, presenting the fictions in public almost as an exhibition and *“exposing, debating and reinterpreting problems and issues”* that is common for the showroom context of design research (Koskinen et al. 2011, p.123). Critical design and speculative design use showroom context to get the audience to question the current ways of doing things (Koskinen et al. 2011, p.95) and to reflect on the changes that the future might bring. By presenting an object, video clip or a new speculative service for the audience, the showroom context leaves the interpretation and discussion open for the ones participating: there is no need to reach a conclusion on a speculative object but the participants can ponder on the topic on their own. That position of design fictions changes once it is used in workshops, as the participants are expected to work on the presented topics and context. Workshops have secured their place in participatory design, bringing together all the stakeholder groups involved to share their knowledge and challenges, to create new solutions together (Vines et al. 2013, p.2). One example case on bringing design fictions to workshop context is from Brown et al. (2016) where industry and academic collaborators worked together on a speculative, futuristic IKEA catalog, that acted as a boundary object and helped the participants to discuss about the future changes and not getting stuck in today (p.1-2).

In our workshop, the design fictions are not presented as an outcome, like in Brown et al. (2016) and Ylipulli et al. (2016), but used as a tool in the tasks. One challenge in the workshop was connecting the

fictional scenarios and use of them in the tasks to the real development work of future business collaboration in the D4V project. It seemed like the participants saw them as two completely separate things: the tasks focusing on the project as more relevant and the fictions focusing on imagining possible, unrelated futures. The terms fiction and story have strong associations, Knutz et al. (2014) point out that fictions are easily labeled to be “*untrue or unreal*” and “some whimsical ideas of an author’s mind” (p.8). They suggest that the use of metaphors can help in approaching the imagined fictions, as something familiar is used to approach the unknown (Ibid, p.4). At the same time, Kirby (2010) describes examples from movies that have introduced new and still foreign technologies to audiences, like movie *Threshold* (1981) that showed the first artificial heart implantation. The diegetic prototypes in movies are reducing fear over the new technologies and creating desire in the audiences. (p.1-2) Through seeing the new technology functional and in use, even though in something fictional like a movie, the audience starts to slowly accept the presented and consider their place in the real life as well. The idea of acceptance is close to the D4V project WP4 as well, since its theme is ecosystem acceptance. It is possible to speculate, that even though the final outcomes of the workshop have not yet found (at the moment of writing) their further use in the project, the workshop might have started the acceptance process of a future with an ecosystem of some sort.

## 5.2 Structuring the tasks

For the organisers, the design fictions were a tool for suggesting values and ideas, for setting the participant roles for the workshop tasks and for facilitating and structuring the tasks, as the tasks were built around the speculation and topics of the design fictions. For the participants, the design fictions were a starting point and a frame to work on, while they also provided different perspectives and encouraged to imagine what the future would be like. The design fictions can help in getting the participants to engage and explore the workshop tasks.

Through their work with using fictions in participatory design, Knutz et al. (2016) have defined a list of fiction strategies that provide the participants with different types of entry points to the fictions. Out of those roles, our workshop ended up using value fictions, perceptual bridges and fictional space as design space. (p.5) The value fictions were the design fictions speculating on the relationship of human value and extreme efficiency in Episode 2 and most of the design fictions did include something familiar from today to create a perceptual bridge for the participants. The design fictions presented scenarios that the tasks were expected to take place in or continue, making the fictional world of 2030 into the design space of the tasks. The fiction strategies of Knutz et al. (2016) aim at making the participation and use of fictions more fluent and effective. Similarly many of the roles that I defined are

about guiding the participants to get into the topic that is discussed and the related tasks and to present new perspectives into possible futures. While the roles I defined do not include so specific strategies for the design fictions, they are suggesting how the design fictions as a method in a co-design workshop can participate in facilitating and structuring the task by providing a participant role, the starting points and different perspectives to consider.

As the design fictions were a platform to suggest and present future perspectives, at the same time those offered ideas and ideologies affected the participant engagement in the workshop, as the ideas and concepts in them were not agreed with and the tasks were completed for the sake of the workshop. Elsdén et al. (2017) state that by focusing on some specific topic or values, the approach ends up limiting the participant engagement and the actions that the participants could take. Too much focus and direction with the fictions may end up breaking the imagination that the method counts on. (p.8) The amount of direction is good to consider already when creating the fictions and the tasks, to keep enough opportunities open for the participants to have the chance, or at least the feeling, of being able to affect the scenario. With us, having strong views from the background interviews and goals in getting the participants to consider the societal side of the future changes, the workshop tasks were full with materials that in the end did not leave enough space for the participant thinking.

The participant motivation is affected also by the way things are set up and presented. Vines et al. (2013A) write on the relationship between the initiators and beneficiaries of participant involvement and how imbalance in the benefits between the groups affects the attitude towards the involvement (p.4). Referring to Speculative enactments, Elsdén et al. (2017) discuss how the participants were fully included on the whole experiment and the approaches taken. By offering something personal and meaningful to the participants, the engagement in the enactment is taken more seriously. (p.10) But implementing something meaningful to the design fictions and workshop tasks become more challenging once the tasks are not involving individuals, but company representatives.

## 5.3 Embedding values

The design fictions became a platform for embedded values for the organisers and the participants: for the organisers to include the topics that were seen relevant in the background work and for the participants, a platform that suggested something for them to take in or not, or at least to discuss upon. The design fictions can participate in presenting various speculative and contrasting values into the workshop tasks and context.

Design fictions are meant to be critical and provocative about future technologies and changes (Lindley 2015, p.7) and presenting them

through scenarios taking place in the created fictional worlds allows the audiences to evaluate and discuss them (Markussen & Knutz 2013, p.2-3). Design fictions can be seen also as boundary objects (boundary object from Brown et al. (2016) and Vines et al. (2013A) ) to get people from different backgrounds to come together and share their knowledge around the given fictional scenario in the workshop.

In our case, the design fictions were based on our understanding of the overall D4V project, which in the workshop was realised not to match with many of the participants', the other D4V project collaborators, views. Even though the design fictions in the workshop could have been seen as boundary objects for the participants to discuss around, the presented topics ended up affecting the motivation of the participants. Rather than opening up a discussion on what they are not agreeing on, the participants seem to have gotten stuck on what is presented to them, which tells about the lack of communication on the role of the fictions and the tasks. Vines et al. (2013A) write on such cases of preconceptions: *"Once we accept that preconceptions exist, then designers and participants can collaborate with one another to identify in what ways these assumptions need to be reconfigured"* (p.8). Such an approach requires time, but a workshop getting a multi-industrial group of collaborators to at least realise the existing different views, can be a start for the process. Vines et al. (2013) comment that in cases where the participants are not experts in the discussed topic, for example new technologies, *"participatory work is as much about building trust and social equality with members of the community as it is designing and deploying technology"* (p.4).

On the level of speculation and provocation, Auger (2013) states that some is needed to initiate the engagement with the fiction, but having too provocative fictions on sensitive topics might get the participants to dislike and refuse the speculation (p.4). Our workshop context is maritime industries and B2B relations, and some of the design fictions in the tasks were considered to be too extreme by the participants and therefore they didn't see them relevant. While creating the tasks, consideration on the sensitivity of the suggested speculations on the B2B and business context is important to make the design fictions familiar and relatable enough to be taken seriously.

#### 5.4 Reflecting the roles

Tanenbaum et al. (2016) have analysed the roles that design fiction can carry in a movie that is presenting a future world and the new kind of society that the changes in the environment have led (p.1). They have listed out three roles that design fictions can serve that have similarities with the roles that I encountered in the workshop context.

The first role that Tanenbaum et al. define for design fictions is communicating future values and the consequences of those value choices made (Ibid, p.3), which is a role that the design fictions also got

in our workshop. The design fictions were a tool for us organising the workshop, as they gave us the opportunity to present fictional scenarios of possible futures and to embed societal values into them. For the participants, the design fictions were speculative glimpses of possible futures, that made it more concrete to think of the future technologies and its possibilities. Due to the limitations in our communication of the purpose of the design fictions and the focus on the societal values, the design fictions in our workshop did not fully succeed in getting the participants to the discussion on the values.

The second role from Tanenbaum et al. is that of setting the mood of audience towards changes that new technologies and environmental issues might bring, a rhetoric way of introducing new scientific findings, backed up with real scientific almost break-through research, to people to raise negative or positive attitudes (Ibid, p.4). The design fictions in the workshop didn't get this role with new and emerging technologies, since the speculations that were presented were focusing on the societal values that were embedded into some technological future. In a way the design fictions were presenting future scenarios that include an ecosystem that could be resulting from the D4V project, and therefore the fictions are taking the role of setting the mood. When organising a workshop with design fictions, this role is an important point to keep in mind though: we also realised it in the pilot workshop after a comment from a participant on how the fictions were presented in quite a totalitarian manner. After the pilot, we adjusted the approaches in the fictions to make them more positive and free.

The third role is about providing the audiences a way to discuss, encounter and handle emotions that possible futures might bring (Ibid, p.4). Even though in our workshop the participants didn't get to the level of discussing their emotions through the fictions (like we hoped they would), the design fictions provided the participants with a chance to discuss and imagine the future changes in work life and technologies. That is also one role that I noticed from the material, that the design fictions provide the participants with a chance to explore the year 2030.

## 6. Overall critical discussion

The analysis led to a set of roles that design fictions can be used for and take on, but the workshop case 2030 – An Ecosystem Odyssey brought up also other discussions on the use of design fictions as a method, like the format of the fictions and the challenge of keeping the participants motivated.

### 6.1 Format and focus

The format of the fictions in the workshop ended up being quite traditional and perhaps something that some of the participants, based on the feedback interviews, were expecting more of. The design fictions in the workshop presented the context and details for the task, but engaging the participants in a meaningful manner and personally was given less attention.

The workshop context affects the use and needs for the method. Instead of only presenting a speculative idea, the design fictions in the workshop need to present a context and provide enough information for the participants to use them in the tasks. The format of design fictions can be anything, but the workshop context demands it to be engaging, easy and fast enough to understand by the specific group of participants that will be joining the workshop. Lindley (2015) states that while design fictions are not tied to a specific format, film as a format works well since it communicates the world and diegetic prototypes well and also, “*most audiences are literate in the language of film*” (p.6). Tanenbaum (2014) comments that as important as the structural elements of the design fictions are, it is important to consider the participant experience and the way the story is told to them, to make it believable and interesting (p.2).

The design fictions in our workshop were short, presenting the context and the embedded values in quite a brief way but still provoking thinking and discussion on what is presented. The short design fictions were a light method for us organising the workshop, since the story world of the fictions was not filled with details that would need to be presented and adjusting the focus of the fictions was not as laborious. When building an intricate story world, all details presented need to follow the rules of the fictional world to make it believable (Tanenbaum 2014, p.1) which would have required more work on the design fictions, tasks and the related materials. The short fictions were all about the year 2030, presenting different and even contrasting glimpses of the future and we did not need to make them coherent together. A longer fiction would have also required more effort and time from the participants to understand and engage with, while the short fictions present-

ing only glimpses of the imagined story world leaves more details for the participants to imagine on their own.

The short design fictions in our workshop presented concepts and new systems and some of the consequences of them taking place in the imagined year 2030, but there were not any characters or their stories taking place in the scenarios. Even though the design fictions are not presenting narratives in our workshop, the design fictions participate in the overall storyline of the workshop and the narrative of the participants travelling to 2030 to find insights into the development work of D4V project. Blythe (2017) has researched the types of plots that design fictions often have established in different kinds of HCI projects. In a similar case to ours, he describes it: “*Although there is no explicit overarching story, there is a meta narrative and it takes the form of the Voyage and Return: the reader ventures into this world and then comes back*” (p.7). When well communicated to the participants, the overall narrative of the workshop ties in the participants and the real-world project as well. Blythe (2017) states that by developing and understanding better the storytelling used with design fictions, one can achieve more meaningful and effective means of engagement for the participants (p.10).

Different approaches with design fictions could lead to different outcomes: what if all the tasks took place in one, long design fiction or what if the fictions presented characters or included the participants as characters with power to build the fiction further? Of course what is asked in the tasks affects also the outcome of the workshop, whether the method is familiar to the participants or not but with a method that is not familiar to all of the workshop participants, it is important to establish a common goal between the organisers and participants and to take that into consideration when creating the tasks. As people are familiar with the concept of workshops, there are expectations also on the outcome of them. Lindley (2015) states that when doing research through design fiction, the outcome of design fiction never focuses on “*material end product*” as the “*design fictions are primarily aimed at producing insights*” (p4), which might be against the common understanding on workshops aiming for something concrete for further development. The tasks in our workshop, aiming for concrete solutions even though in 2030, might have created the feeling that the workshop as well, is aiming for creating new technical approaches to be used one day. The values and discussion were not the focus of the tasks, which gives the impression that those are not the focus of the workshop either. The tasks were using the design fictions to set the stage and get the participants active. The way the task were set and frased supported the participants to get to a solution to the task, not phrasing their thoughts or worries on the given scenarios of possible futures.



## 6.2 Disagreeing with the fictions

In one feedback interview, a participant describes how *“it would have been nice to have the opportunity to update the scenario to something more realistic”* in order to *“connect with the actual scenarios and not think like ‘Come on this is totally unrealistic scene’”*. The comment seems to stem from unclear view on design fictions and how we meant them to be used in the tasks, which we clearly did not communicate well. Having the possibility to make the fictions more realistic (which there was, but no time or proper instructions to do so) might have made the discussion easier since now the teams struggled with the limitations from the design fiction that they were trying to stick to. With a chance to make the fictions more open for chance, the participants could have made them into their own cases that work in the way they would see desirable.

The disagreement with the design fictions and not having time to change them probably affected the way the participants’ attitude towards the workshop, making it feel “not theirs” but instead something given that they did not have any possibilities to affect. One participant comment from Episode 2 tells about the attitude towards the design fictions and the tasks:

*P: “so that is one path that has been selected then”.*

Some effect on the motivation of the team might have come from the topics that the fictions were assuming and in a way forcing on the participants, topics that the participants didn’t feel completely relevant, like one participant comments in Episode 2

*P: “okay, let’s leave it for a while. This seems like, to me, this seems like a completely irrelevant question in this context, but..”*

Also allowing the teams to choose the design fictions for the tasks could have helped with motivation, as the participants would have been the ones that chose the topic to discuss (from a selected set of topics though). In Episode 1 there was no possibilities for the teams to affect the choice of design fiction since each team received one fiction out of three. In the Episode 2 instead the team did have a chance to choose, discard or develop any of the design fictions but since the topics on the task questions reflected the topics of the design fictions and the time was so limited, changing viewpoints would have been time consuming.

As design fictions are about imagining possible futures and especially when combined with a real-world background project, it is important to consider how and by whom the ideas in the fictions are suggested. Defining something ready in the design fictions can lead to discussion, but for development work, more free and less defined approach may be more efficient. Ownership over ideas gets people invested, so reserving space for developing own perspectives and ideas is important.

## 6.3 Reflection and further work

The whole project taught me loads about the challenges and possibilities of including design research into a industrial and business orientated project. Analysing the workshop afterwards have gotten me to realise many practical points that could have been done differently.

The focus of the workshop should be in line with the outcome expectations and with the previous knowledge of the project already when the fictions are written and the tasks created. It is at the same time also important to keep in mind the personal goals for the workshop and from time to time, to stop and reflect to see if the project is still following the original plan. When considering the set of values and topics that came up from the background work for the design fictions in our case, it seems like the general focus from the interviews continued to the workshop as well. Not focusing only on the ecosystem acceptance, the workshop and the tasks ended up covering various topics connected to societal values but also to ecosystem structures and strategy. In a way, the workshop ended up being a mix of every aim, trying to find a balance between research and the project.

The format and presentation of the fictions provided us with a chance to try out formats and different ways of presenting, but due to changes in the tasks after the pilot we ended up focusing our efforts on fixing the storyline instead. Therefore the format and the way of presenting is something worth more exploration, it would be interesting to research how different approaches to presenting the fictions would change the participant engagement. Different formats, like videos, could help in making the fictional scenarios more real and existing, while role play, including the participants could make the discussion on societal values more prominent and personal. Adding more playfulness to the workshop would be interesting as well. In the end all the approaches with design fictions as a tool come with the challenge of how to combine the work done within a fictional scenario with the real project that the participants are participating in. Hanna et al. (2016) states that to find a way to combine and balance the work on the real context and work done in the fictional scenarios, there has to be freedom for imagination but a good set of real goals as well (p.7). It would be interesting to explore what kind of an effect would less material and more time and freedom have in our workshop.

More attention should be given also to the participants and their experience with design fiction as a workshop method. Exploring how different means of presenting the design fictions or engaging the participants into the story world changes the experience for the participants would be valuable for developing design fiction as a method. Also the challenge of combining fictional scenarios into concrete real life projects could be researched from the participant point of view to find out the painpoints in the process.

The findings on the roles of design fictions can provide perspectives when planning a new workshop with design fictions by providing points to consider when creating the tasks and pondering how the design fictions could be integrated. All tasks require structure and facilitation, but considering the embedded values and their effect on the participants is valuable, as well as establishing connections between the fictions and the real life projects. Of course the findings are based on material from only one case study and further work on design fictions in workshop context is important to consider the validity of the findings.



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